

Appln. No.: 10/776,473
Amndt. dated September 8, 2005
Reply to Office Action of April 8, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A ~~metal alloy~~ metallic thermal barrier coating comprising an alloy metal and greater than about 4 atomic % of at least one P-group alloying element, wherein said metal thermal barrier coating has a thermal conductivity equal to or less than about 10 W/m-K at 400 degrees Celsius.
2. (Currently Amended) ~~A metal alloy~~ The metallic thermal barrier coating of claim 1 wherein the P-group alloying element is present at a level of 4 atomic % to 50 atomic %.
3. (Currently Amended) The ~~metal alloy~~ metallic thermal barrier coating of claim 1 wherein said P-group alloying element is selected from the group consisting of carbon, nitrogen, phosphorous, silicon, boron, and mixtures thereof.
4. (Currently Amended) ~~A metal alloy~~ The metallic thermal barrier coating according to claim 1, wherein said at least one P-group alloying element comprises 16.0 atomic % B, 4.0 atomic % C, and 5.0 atomic % Si.

5. (Currently Amended) ~~A metal alloy~~ The metallic thermal barrier coating according to claim 1 wherein the alloy metal is selected from the group consisting of iron, chrome, molybdenum, tungsten, manganese, cobalt, nickel, copper, and mixtures thereof.

6. (Currently Amended) A method for ~~reducing the thermal and/or electrical conductivity producing a metallic thermal barrier coating of a metal alloy composition comprising:~~

(a) supplying a metal alloy composition; and
(b) supplying a P-group alloying element;
(c) mixing said metal alloy composition and said P-group alloying element wherein said P-group alloying element is present at a level to reduce the thermal and or electrical conductivity of said metal alloy composition, wherein said metal alloy has a thermal conductivity equal to or less than about 10 W/m-K at 400 degrees Celsius.

7. (Currently Amended) A method of ~~reducing the thermal and/or electrical conductivity producing a metallic thermal barrier coating of a metal alloy composition comprising:~~

(a) supplying a base metal with a free electron density
(b) supplying a P-group alloying element
(c) combining said P-group alloying element with said base metal and decreasing the free electron density of the base metal, wherein said metal alloy has a thermal conductivity equal to or less than about 10 W/m-K at 400 degrees Celsius.

8. (Original) The method of claim 7 wherein the free electron density of the base metal is reduced from its base metal value, and wherein said free electron density is generally representative of a fully filled outer shell after combination with said P-group alloying element.

9. (Original) The method of claim 7 wherein said P-group alloying element is selected from the group consisting of carbon, nitrogen, phosphorous, silicon, boron, and mixtures thereof.

10. (Currently Amended) The method of claim 7 wherein the base metal is selected from the group consisting of iron, nickel, cobalt, aluminum, copper, zinc[.], titanium, zirconium, niobium, molybdenum, tantalum, vanadium, hafnium, tungsten, manganese, and combinations thereof.